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Quality, use, and benefit of medication schedules in elderly ambulatory patients

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Drug information is essential for patients to follow their pharmacotherapy adequately and to administer their drugs safely and correctly. The provision of information material indeed increases the understanding, knowledge, and adherence of patients, and additionally, improves health outcomes. Yet, information is only sparsely provided in daily routine, often only verbally, and patients risk forgetting or misunderstanding verbal instructions. Therefore, patients should be furnished with a medication schedule – a written document containing all details necessary for patients or their caregivers to accomplish drug therapy. In total, 2,470 of 2,761 elderly ambulatory participants included in the ESTHER cohort study took at least one medicine (89.5%). However, only a small minority of them (n=553, 22.4%) had a medication schedule at hand, even though half of them had to regularly take 5 medications or more, and almost three quarters of them were facing complex drug regimens. The majority of medication schedules had been created by health care professionals (HCPs; 63.8%, most often physicians, followed by hospitals, and one pharmacy) and were generally of better quality. For instance, dosing instructions were more often precise, and they were mostly computer-generated and printed which facilitated legibility. However, important information for a safe and effective drug intake were only rarely found on the evaluated medication schedules. As an example, information on food-drug interactions were included only on 8% of the medication schedules, even though food or certain food ingredients can influence safety and efficacy of various drugs. Furthermore, also the time point of drug intake in relation to food intake can be important for some drugs (e.g., PPIs), and by disregarding a synchronized PPI administration with food intake the risk for treatment failure was 3-fold increased.

Physicians have actually acknowledged the importance of adequate drug information and counseling of patients, and the majority of them stated to create medication schedules for two thirds or more of their patients. However, only few of their patients had a medication schedule at hand which might have resulted from physicians overestimating the number of patients they had furnished with a medication schedule, or patients not using the documents they had received. Actually, medication schedules issued by HCPs were more often manually corrected and thus ambiguous compared to documents created by patients themselves or their relatives,

which supports the assumption that these medication schedules were not up-to-date anymore and therefore useless for the patients. This stresses the need for implementing adequate software solutions enabling all persons involved in the pharmacotherapy of a patient to create, up-date, change, and print a medication schedule. This has also been recognized by the authorities and it is planned to make the nationwide use of medication schedules in daily routine mandatory for patients with polypharmacy. However, it should be assessed which information should be contained on medication schedules, and the best and most appropriate way to provide it (e.g., written information enhanced with illustrations, language tailored to low health literacy patients) before its implementation. Medication schedules can positively affect patients' adherence, knowledge, and health outcomes, and also HCPs can benefit from using this document because they might obtain a better overview of the medications taken by a patient. For instance, physicians often do not know all drugs their patients are taking, and there are often discrepancies regarding the number and type of medications and the dosing modalities when different information sources (e.g., lists from patients, pharmacies, physicians, or hospitals) are used. Thus, an actual, legible, informative, and regularly used medication schedule has the potential to effectively increase the safety of pharmacotherapy. Even though only a small proportion of patients was using a medication schedule, sending an information brochure with general aspects of correct drug administration, the value and utilization of a medication schedule including an empty medication schedule template did not increase the number of medication schedules found among these elderly ambulatory patients. In conclusion, a medication schedule is a useful tool containing all information and details necessary for a safe and effective pharmacotherapy. It can be used by both the patients and responsible physicians, pharmacists, and other caregivers, and has the potential to increase the safety of pharmacotherapy if it is kept up-to-date and regularly used. However, only a small minority of elderly ambulatory patients already used a medication schedule, of which most were created by HCPs. Furthermore, they often did not contain all information patients might have needed.